

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (currently amended)

An automated computer-controlled field-deployable  
2 monitoring instrument system for collection and analysis of  
environmental contaminants and determining the concentration  
4 of an analyte of interest in ground water, industrial and  
surface water, comprising:

6 diversion means dividing a water sample into first  
and second flow paths, said first flow path directing the  
8 water sample to a sample vessel for analysis, and the second  
flow path passing the water through a water treatment  
10 cartridge containing a sorbent media to eliminate the  
analyte of interest before introduction of water into the  
12 sample vessel,

means to calibrate said instrument,

14 a calibration assembly to add a standard of predetermined  
concentration of analyte to the water after it passes through  
16 a water treatment cartridge containing a sorbent media to  
eliminate the analyte of interest,

(continued)

## 1. (currently amended - continued)

18 a sample vessel to receive water from said single flow  
path to determine the concentration of the analyte in the  
20 sample water for either of the first or second flow paths,  
and

22 means between the calibration assembly and the sample  
vessel to reunite said first and second flow paths into a  
24 single flow path.

## 2. (original)

An automated monitoring system according to Claim 1,  
2 and further comprising a calibration loop for establishing  
a predetermined amount of standard solution.

## 3. (original)

2 An automated monitoring system according to Claim 1,  
and further comprising:

means to provide a matrix modifier, and

4 a valved loop defining a volume of matrix modifier  
introduced into the sample chamber.

4. Canceled.

## 5. (previously presented)

An automated monitoring system according to Claim 1, and  
2 further comprising a casing for the analytical and calibration  
assemblies to provide improved environmental control, ease of  
4 maintenance and security.

## 6. (currently amended)

An automated monitoring system according to ~~Claim~~--  
2 Claim 1, and further comprising means for stirring a ground  
water sample to enhance volatilization of concentration of the  
4 analyte in the sample.

## 7. (original)

An automatic monitoring system according to Claim 1, wherein  
2 trichloroethylene is the analyte of interest, and monitoring and  
analysis are performed utilizing an optrode assembly and  
4 procedure.

8. (currently amended)

2 A method for determining concentration of an analyte  
of interest in ground water and surface water, comprising:

4 providing a field deployable automated computer-  
controlled monitoring system and instrument for determining  
concentration of an analyte of interest in ground water and  
6 surface water,

calibrating said instrument,

8 collecting and transporting a water sample to a  
preparatory treatment assembly,

10 passing the water sample to diversion means to divide  
the water sample into first and second flow paths, said first  
12 flow path directing the water sample to a sample vessel for  
analysis, and the second flow path passing the water through  
14 a water treatment cartridge containing a sorbent media to  
eliminate the analyte of interest before introduction of  
16 water into the sample vessel,

(continued)

## 8. (currently amended - continued)

18        passing the water sample to a calibration assembly  
to add a standard of predetermined concentration of analyte  
20        to the water sample after it passes through a water treatment  
cartridge containing a sorbent media to eliminate the  
analyte of interest,  
22        reuniting said first and second flow paths into a  
single flow path, and  
24        passing the single flow water sample to an analytical  
assembly to determine the concentration of the analyte in  
26        the sample water for either of the first or second flow  
paths.

## 9. (original)

A method according to Claim 8, and further comprising:

2        introducing calibration standards into a standard  
container and transporting the standard by a sample vessel.

## 10. (currently amended)

A method according to Claim 8, and further comprising  
the steps of:

said calibration of the instrument is accomplished  
~~calibrating-for-analysis-~~ by providing a predetermined  
amount of standard solution via a calibration loop and  
passing it into the sample chamber.

## 11. (original)

A method according to Claim 10, and further comprising:

passing the sample from a well casing to a calibration  
system to prepare blanks or standards for addition of the  
standard directly for use in the analytical assembly.



12. (previously presented)

A method according to Claim 8, and further comprising  
2 the steps of:

introducing the sample into a sample vessel  
4 until a lower sensor is satisfied, and

adding water to the sample vessel from a water  
6 treatment cartridge until an upper water level sensor in  
the sample vessel is satisfied to provide a predetermined  
8 dilution.

13. (previously presented)

A method according to Claim 8, wherein the analyte  
2 of interest is trichloroethylene and analysis utilizes an  
optrode assembly.

14. (previously presented)

2 A method according to Claim 8, and further comprising  
relaying analysis data from the analytical assembly to a  
communication system for transmission to a cognizant agency.

15. (previously presented)

2 An automated monitoring system according to Claim 1,  
and further comprising a sampling device within a well  
casing and comprising valve means and water level sensor  
4 means to provide a ground water sample of predetermined  
volume.

## 16. (previously presented)

An automated monitoring system according to Claim 15,  
2 and further including a treatment assembly to receive the  
sample from the sampling device, said treatment assembly  
4 comprising means to provide a calibration standard for the  
analytical assembly, and one of (a) a treatment cartridge  
6 to filter the sample and a calibration sensor, (b) a source  
of analyte-free water connected with the treatment assembly.

## 17. (previously presented)

An automated monitoring system according to Claim 1,  
2 and further comprising means to receive analysis and assay  
data from the analytical assembly to transmit the data to a  
4 cognizant agency.

## 18. (new)

2 A method of calibrating an analytical sensor using  
sample water as a water source for the creation of standards  
of known concentration, comprising:

4 dividing said sample water into a first flow path  
and a second flow path,

6 passing the first flow path water directly to a  
sample chamber for analysis,

8 passing the second flow path water through a media  
canister adapted to remove an analyte of interest,

10 adding a predetermined volume and concentration of  
an analytical chemical into said second flow path to provide  
12 a solution of known concentration, and

introducing said solution of known concentration  
14 into the sample chamber for calibration standard analysis.

## 19. (new)

2 A method according to Claim 18 wherein a three  
way valve is utilized for said dividing of said first flow  
path.

## 20. (new)

2 A method according to Claim 18 wherein multiple  
volumes of a standard are injected into the second flow  
path to create varying known concentrations of calibration  
4 standard for introduction into the sample chamber.

## 21. (new)

2 A method according to Claim 18 wherein a calibrated  
loop serves to measure the volume of said analytical chemical  
into the second flow path.

## 22. (new)

2 A method according to Claim 18 wherein activated  
carbon, zeolites, ion exchange, or other sorptive media are  
used in a canister in the second flow path.